

Thesis/
Reports
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CRATER FUEL MANAGEMENT PLAN
FLAGSTAFF RANGER DISTRICT COCONINO NATIONAL
FOREST
REGION 3

Angus M. Porter

Buck

CRATER FUEL MANAGEMENT PLAN

FLAGSTAFF RANGER DISTRICT

COCONINO NATIONAL FOREST

REGION 3

FOREST SERVICE

USDA

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DATE:

2/11/77

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DATE:

3/2/77

CRATER FUEL MANAGEMENT PLAN

The purpose of this plan is to provide direction for a method of efficient and thorough reduction of slash resulting from sawlog and precommercial thinning on the Crater Timber Sale.

There are some acres within the Crater Sale which could be pulped; however, at this time, it appears that it will be ten years before any pulpwood will be cut. At that time, a Fuel Management Plan will need to be prepared and the corridors which are prepared for thinning now must match the pulp.

It should be recognized that logging and thinning depends on several variables (market, adverse weather, and allotted money.)

A. Objective

This plan will accomplish the following:

1. Reduce or eliminate slash created by logging and thinning. Existing fuel loading within the Crater Timber Sale runs from 5.28 T/A to 49.73 T/A. These are existing fuels on the ground at the present time, which meet or exceed the 15 T/A upper limit criteria.
2. Reduce fire hazard.
3. Minimize scorch and damage to residual stand.
4. To put the sale area (cleanup) in as good or better shape slash-wise than it is now.

The Crater Timber Sale includes all or portions of Section 21, 22, 32, 33, and 34, T23N, R6E. Section 3, 4, 5, 8, 9, 10, 15, and 16, T22N, R6E, G&SRB&M. This area receives a heavy impact by recreationists along U.S. Highway 180 and Forest Road 151, the Hart Prairie Road. In a five-year period, (1970-1975), there has been ten man-caused fires and four lightning fires within the Crater Timber Sale area. All these fires were class A in size; however, the Fort Valley Burn, a class E fire, occurred in about 1957. The Crater Timber Sale lies within the preattack Block E.

There are 2100 net acres to be logged. Of the total acres to be logged, 1140 acres are scheduled to be thinned.

B. Treatment

Based on these facts we recommend the following fuel treatments by Compartments:

1. Compartment 054

Stand #1 (46 acres) is primarily a pole stand with a few small sawlogs. It is felt that excessive damage would be done by 100 percent piling this stand. The sawlog cut will be very low, approximately 530 BF per acre. An average of .25 trees per acre will be cut in this stand. It is recommended that this stand be lopped. It is estimated that two tons of slash per acre will be created by logging this stand. A fuel inventory show 7.37 tons of existing fuels now on the ground.

Stand #2 (100 acres) is also a pole stand with a low to moderate volume being cut (approximately 1613 BF). There is an average of 1.4 trees per acre being cut. It is also felt that excessive damage to the residual pole stand would be done if it was piled. It is recommended that this stand be lopped as a fuel treatment. It is estimated that six tons of slash per acre will be created in this stand by the logging cut.

Stand #3 (888 acres) is a mixture of ponderosa pine and aspen. There is an older overstory of large trees that will be cut. This stand has approximately 1576 BF per acre to be removed. This is not a pole stand. Piling can be done with out excessive damage to the residual stand. It is recommended that this stand be 100 percent piled. It is estimated that six tons of slash per acre will be added to this stand.

Stand #4 (461 acres). This stand is ponderosa pine with an average of 1.9 trees per acre being cut and 2481 BF per acre. Most of the sawtimber is in groups of several trees. Some damage will occur to the remaining saplings and poles; however, 100 percent piling should be done in this stand because of existing fuel loading. Three fuel inventories were taken in this stand. The results showed an average of 17.44 tons per acre and a high of 49.73 tons per acre. It is estimated that nine tons per acre of logging slash will be added to this stand. The stand is also to be thinned and piling damage should be mostly cleaned up at this time.

Stand #5 and #6 (83 acres) are aspen stands with no pine volume to be cut.

Stand #7 (51 acres) is primarily a pole stand with an older overstory. Approximately 2054 BF per acre will be cut. It is recommended that this stand be 100 percent piled. It is estimated that approximately eight tons of logging slash will be added to this stand from the logging.

Stand #8 (16 acres) is the TIZ along U. S. Highway 180. Although very little is to be cut (poor risk and few thinners), it is recommended that what slash is created to be 100 percent piled five chains in width because of the ever present man-caused fire risk along the highway.

There is also a proposed fuelbreak which runs through stands 3 and 4. It is recommended that all newly created slash in these stands be piled. There are 106 acres in the proposed fuelbreaks. The District should attempt to acquire 101 money for old slash to treat the residual slash in this fuelbreak. One hundred six at \$25.00 per acre = \$2,650.00.

2. Compartment 061

Stand #1 (331 acres) is almost entirely mixed age aspen and is not considered economically feasible to log at this time. If a few trees are cut in this stand, it is recommended that the cull logs be yum-yarded and the tops be lopped.

Stand #2 (188 acres). This stand is ponderosa pine blackjacks. It is a fairly open stand and should be 100 percent piled without excessive damage to the residual stand. A fuel inventory shows 8.35 tons per acre of residual slash now on the ground. It is estimated that an additional six tons per acre will be added to this. Approximately 1481 BF per acre/will be cut in this stand.

Stand #3 (6 acres) is the TIZ along U.S. Highway 180. Little slash will be created in this stand. Only poor risk trees will be cut. Any slash that is created should be piled for burning because of the everpresent man-caused fire risk along this major highway.

3. Compartment 064

Stand #1 (208 acres). This stand is primarily a young aspen stand with scattered oversize and overmature ponderosa pine. The stand will receive an overstory cut. Fairly low volume will come out of this stand (approximately 1545 BF per acre, approximately one tree per acre). It is recommended that this stand be yum-yarded and the remaining tops be lopped.

Stand #2 (112 acres) is very much the same as stand #1, except the volume to come out is less. Some poor risk and oversize trees will be cut along existing roads. The remaining timber is so scattered that it would not be economically feasible to log at this time. It is recommended that this stand also be yum-yarded and the remaining tops lopped.

Stand #3 (20 acres). This is the TIZ along U.S. Highway 180. The stand is predominantly aspen. Only a few poor risk trees will be cut. It is recommended that what slash is created along the highway be 100 percent piled due to the fire risk along the highway.

Stand #4 (197 acres) is the Hart Prairie Burn. No volume is to be cut.

Stand #5 (286 acres) is primarily an aspen stand with a few ponderosa pine poles. No volume is to be cut this entry.

Stand #6 (20 acres) is the TIZ along Forest Road 151, the Hart Prairie Road. No volume is to be cut.

Stand #7, (142 acres) is predominantly blackjacks with a few groups of an older overstory. Thinnings and mistletoe infested blackjacks will be cut along with the older overstory. Approximately 2230 BF per acre will be cut in this stand (approximately 2.4 trees per acre). A fuel inventory was conducted in this stand. It showed a present fuel loading of 31.25 tons per acre at the present time. It is estimated that an additional seven tons per acre will be added from the timber harvest. It is recommended that this stand be piled for burning. This is approximately 40 acres of private land within this stand that will not be cut. The south, west, and north sides of this private land will not be cut as it is inaccessible.

4. Compartment 069

Stand #1 (148 acres) is a pole stand. No sawlogs will be cut on this entry.

Stand #2 (430 acres) is primarily a blackjack stand with a scattered overstory of older trees. Approximately 2230 BF per acre will be cut in this stand. Approximately 2 trees per acre will be cut from this stand. This harvest will add approximately seven tons of fuel to an existing 10.56 tons. Two fuel inventories were taken in this compartment. One was 10.49 T/A. The other was 10.14 T/A. It is recommended that this stand be 100 percent piled and burned.

Stand #3 (64 acres) is the TIZ along U.S. Highway 180 and the Hart Prairie Road. No volume will be cut from this stand.

Stand #4 is the Hart Prairie Burn. No volume will be cut.

5. Compartment 074

Stand #1 (850 acres) is predominantly immature sawtimber and poles. Approximately 1983 BF of timber per acre will be cut. This will add approximately seven tons per acre to the existing fuel loading that now averages 13.98 tons per acre. Two inventories were taken in this stand. The high being 2187 and the low was 6.09. This stand is approximately 850 acres. It is recommended that this stand be lopped and prescribed burned when the logging slash has cured approximately three years after cutting. The reason for this fuel treatment is the now present pole stands that are dominant over the whole stand. If this pole stand is machine piled, it would cause much damage to the residual stand. No thinning should be done until the area has been prescribed burned.

Stand #2 (240 acres) is mostly virgin pine which is inaccessible due to steep slopes and very rocky areas. A small amount of timber along the

south edge of the compartment may be cut. Any timber that is cut here should be 100 percent piled. This area is along the Transwestern Pipeline which is a primary fuelbreak.

Stand #3 (30 acres) is the TIZ along U.S. Highway 180 and the Hart Prairie Road. This stand is very similar to Stand #1. Only poor risk trees will be cut. It is recommended that what slash is created be 100 percent piled due to the fire risk along U.S. Highway 180 and the Hart Prairie Road.

The thinning on this particular sale will be quite scattered. Where proposed fuelbreaks cross thinning stands, they should be 100 percent piled for burning. The remaining blocks of thinning slash should be broken up into individual smaller blocks not exceeding 60 acres. Old and new skid roads used and created from the timber sale should be used as much as possible for these corridors. Proposed locations of some of these corridors are being submitted with this plan. At the present time; however, it is impossible to locate the exact location of the skid roads, consequently, some of the locations indicated on the attached maps will be changed slightly.

6. Compartment 054

Stands #4 and #7 are the primary stands to be thinned. Stand #3 has some small pole stands scattered throughout. The information as to the exact location of the thinning is not known at this time. Approximately 300 acres will be thinned in this stand. Fuelbreaks should be piled wherever a planned fuelbreak crosses thinning areas. In addition, the thinning blocks should be broken up into smaller units not exceeding 60 acres. This should be accomplished by piling corridors that are two chains or more in width.

7. Compartment 061

This compartment has only 47 acres that need to be precommercially thinned. It is doubtful if any thinning will be done in this area.

8. Compartment 064

The only stand in this compartment to be thinned is Stand #7 and only 100 acres are to be thinned. No fuelbreaks run through this stand. The area to be thinned should be broken up with corridors.

9. Compartment 066

This compartment has 568 acres needing precommercial thinning. The thinning will be done in Stands #1 and #2. One planned fuelbreak runs through the stand. This fuelbreak should be piled ten chains wide. This would amount to 52 acres. In addition, two chains of corridors should also be piled thus breaking the thinning area into smaller units not exceeding 60 acres. There is approximately 520 chains of corridors to construct two chains in width. This would amount to 104 acres.

10. Compartment 074

This compartment is made up of only two stands. Stand #2 is mostly inaccessible and no thinning will be done in this stand. Stand #1 makes up the larger portion of the compartment (850 acres). Approximately 50 percent of this stand needs thinning; however, at the present time the exact location of the thinning is not known.

This stand has been recommended for a prescribed broadcast burn after the timber cut. The area should not be thinned until the burn has been completed. It is recommended that the thinning areas also be prescribed burned three to four years after they have been cut. These areas should be lopped to 24 inches as a pretreatment. This burn would amount to approximately 425 acres.

COMPARTMENT 054

Stands 1, 2	142 acres to lop at \$3.20	\$ 455.00
Stands 3, 4,	1234 acres to pile at \$19.00	23,446.00
7, 8	106 acres to (Fuelbreak) pile (101) at \$25.00	2,650.00
	1234 acres to burn at \$5.00	6,170.00
	106 acres to burn (101) at \$5.00	<u>530.00</u>
		\$33,251.00

COMPARTMENT 061

Stand 1	331 acres to lop at \$3.20	\$ 1,059.00
	331 acres to yum-yard at .52 mbf	249.00
Stands 2, 3,	315 acres to pile at \$19.00	5,985.00
	315 acres to burn at \$5.00	<u>1,575.00</u>
		\$ 8,868.00

COMPARTMENT 064

Stands 1, 2	310 acres to lop at \$3.20	\$ 992.00
	310 acres to yum-yard at .55 mbf	257.00
Stands 3, 7	272 acres to pile at \$19.00	5,169.00
	272 acres to burn at \$5.00	<u>1,360.00</u>
		\$ 7,778.00

COMPARTMENT 069

Stand 1	No Cut	
Stands 2, 3	384 acres to pile at \$19.00	\$ 7,296.00
	384 acres to burn at \$ 5.00	<u>1,920.00</u>
		\$ 9,216.00

COMPARTMENT 074

750 acres to broadcast burn at \$4.50	\$ 3,375.00
112 acres to pile at \$19.00	2,128.00
112 acres to burn at \$ 5.00	560.00
750 acres to lop at \$3.20	<u>2,412.00</u>
	\$ 8,475.00

SUMMARY

Piling	2317 acres at \$19.00	\$44,023.00
Piling (101)	106 acres at \$25.00	2,650.00
Burning piled slash	2317 acrea at \$5.00	11,585.00
Burning piled slash (101)	106 acres at \$5.00	530.00
Lopping	1533 acres at \$3.20	4,906.00
Yum-yarding	641 acres at \$.52 mbf	506.00
Broadcast Burn	750 acres at \$4.50	<u>3,375.00</u>
		\$67,575.00
 (101 Fuelbreaks)		 - \$ 3,180.00
		 <u><u>\$64,395.00</u></u>

This figure is 25.50 mbf

FUEL INVENTORY

COMP. NO.	STAND NO.	FUEL TRAN- SECT NO.	TRANSECT MAP DATA	EXISTING TONS/AC.	STEM COUNT		
					SAPLINGS	POLES	SAVINGS
074	1 2 3	#1	H PP $\frac{3.59 - 1'}{2.50 - 1''}$	6.09	655/Ac	255/Ac	0/Ac
069	1 2 3	#2	H PP $\frac{8.71 - 1'}{1.43 - 2''}$	10.14	1745/Ac	135/Ac	4/Ac
		#3	H PP $\frac{8.25 - 1'}{2.94 - 3''}$	10.99	535/Ac	280/Ac	0/Ac
064	1 7 3	#7	H PP $\frac{24.86 - 1'}{6.39 = 2''}$	31.25	315/Ac	180/Ac	1/Ac
	1 2 3	#6	H PP $\frac{5.38 - 1''}{2.97 - 2''}$	8.35	430/Ac	305/Ac	2/Ac
054	1 2 3 4 7	#10	H PP $\frac{2.09 - 1''}{5.28 - 2''}$	7.37	420/Ac	280/Ac	0/Ac
		#8	H PP $\frac{49.00 - 1''}{.73 - 3''}$	49.73	730/Ac	240/Ac	0/Ac
		#9	H PP $\frac{3.37 - 1''}{1.41 - 2''}$	5.28	165/Ac	110/Ac	0/Ac
		#5	H PP $\frac{11.73 - 1''}{3.00 - 2''}$	14.73	235/Ac	435/Ac	0/Ac

CRATER TIMBER SALE
Compartment 074

STAND NO.	ACRES	VOLUME CUT/ACRE	TON/AC ON GROUND	EST. T/A CREATED BY LOGGING	AC. TO BE THINNED	EST. T/A CREATED BY THINNING
1	850	1983	21.87	7	850	16.50
2	290	No Cut				
3	18 (TIZ)	150		2		

Compartment 069

1	148	565		2		
2	430	2230	10.99 & 10.14	7	568	16.50
3	64 (TIZ)					

Compartment 064

1	208	1351		6		
2	142	2230		8	100	14.00
3	20 (TIZ)		31.25			

Compartment 061

1	331	315		2		
2	188	1481		6	47	14.00
3			8.35			

Compartment 054

1	530	530		2		
2	1613	1613		6		
3	1573	1573		6	834	16.50
4	2481	2481	5.28, 14.73, 49.73	9		
7		2054		8		

CRATER TIMBER SALE

COMPARTMENT NO. 054

STAND NO.	VOLUME PER ACRE	ESTIMATED FUEL LOADING T/A	EXISTING FUEL LOADING TONS/ACRE
#1	530	2	
#2	1613	6	
#3	1517	6	
#4	2481	9	
#7	2054	8	5.28, 49.73, 14.73

COMPARTMENT NO. 064

#1	1351	5	
#7	2230	7	31.25

COMPARTMENT NO. 069

#1	565	2	6.09
#2	2230	7	10.99, 10.14

COMPARTMENT NO. 061

#1	315	1	
#2	1481	6	8.35

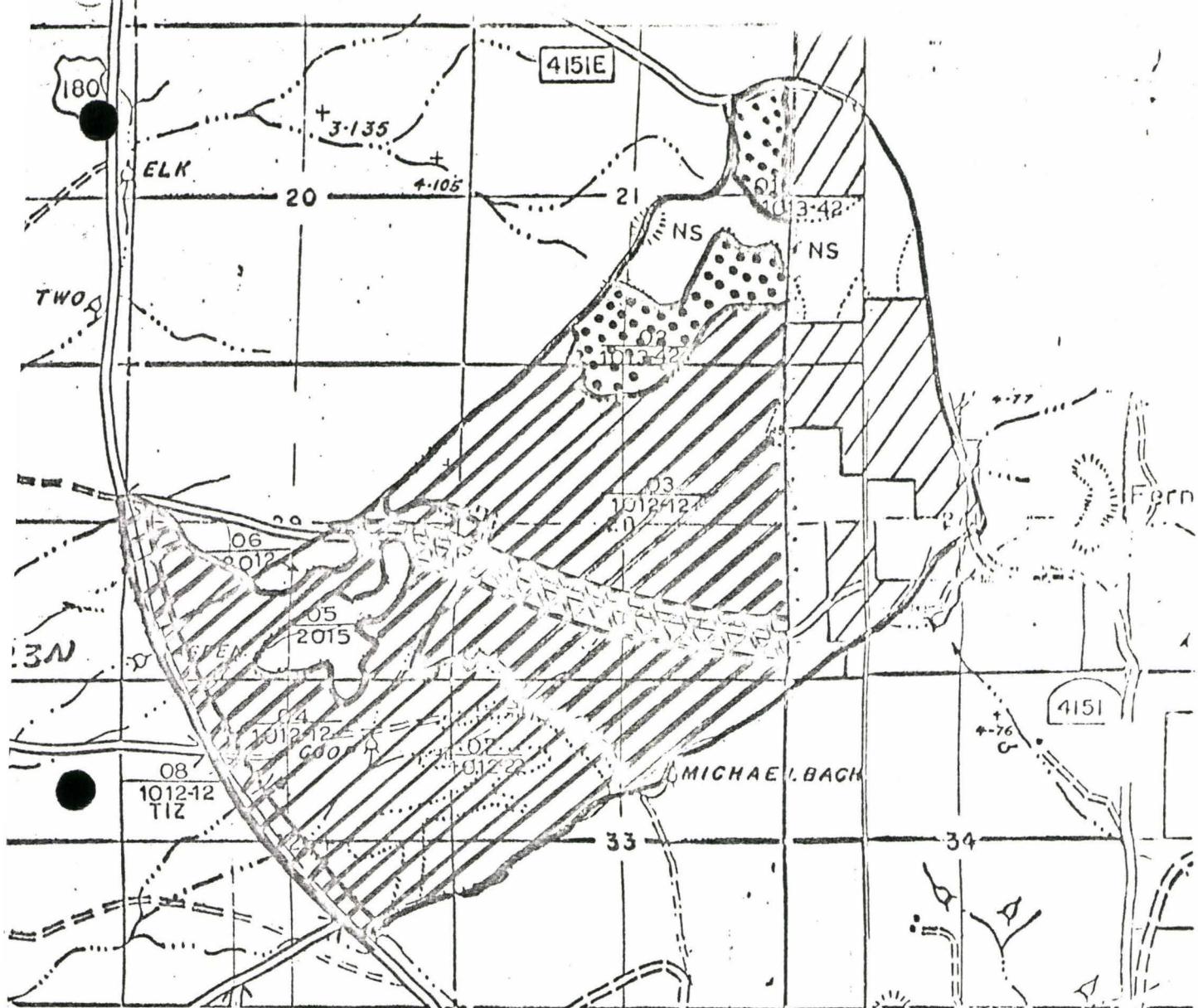
TOTAL ACRES TO THIN:

Compartment No. 054	=	834 Acres
064	=	100
069	=	568
061	=	<u>47</u>

1549 + 850 = 2399

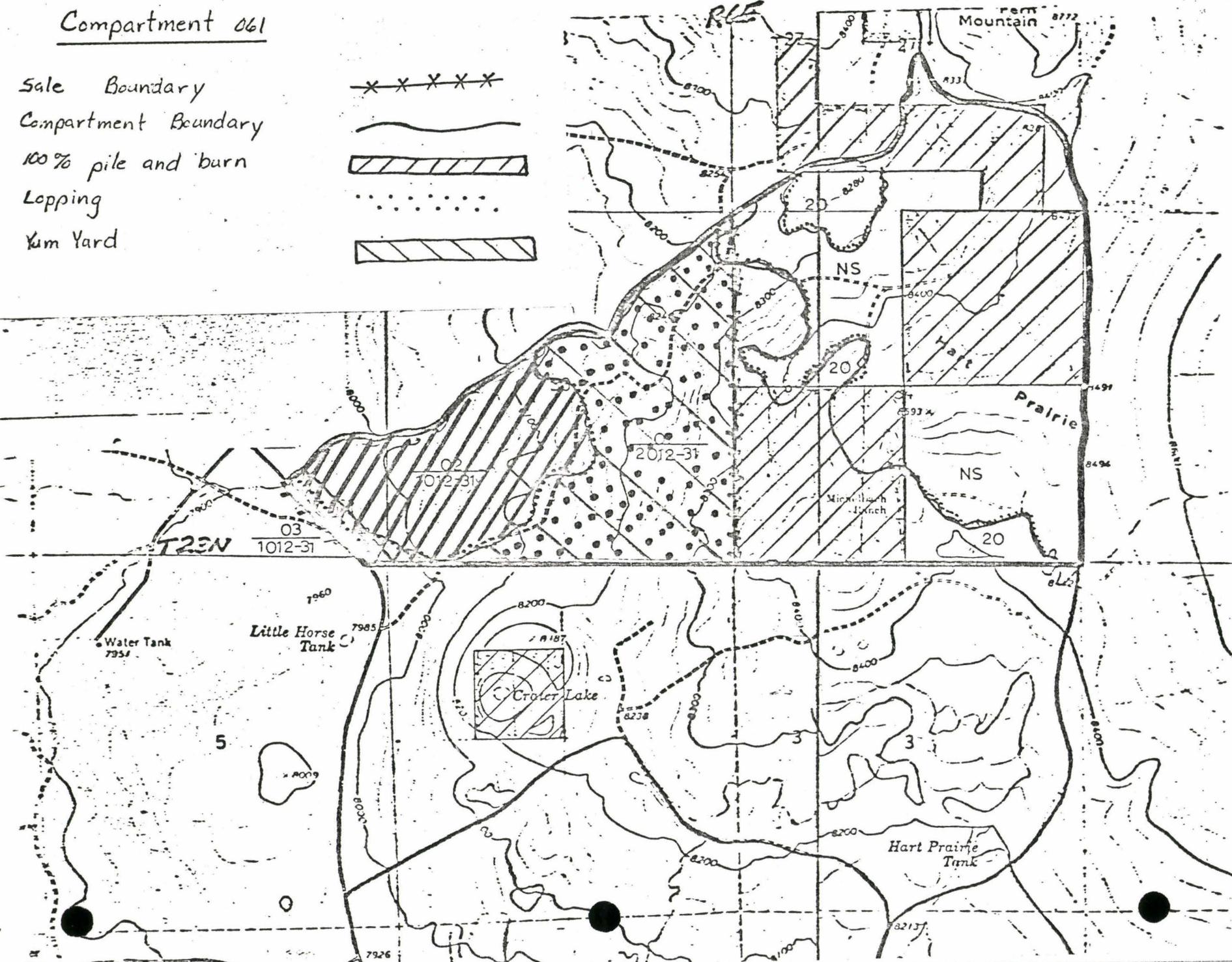
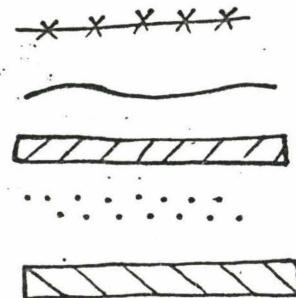
AVE. T/A = 17.00

It is not practical to establish the corridors in the thinning areas at the present time. After the sale has been logged the spur roads and skid trails will facilitate layout of a large portion of the corridors and make them much more effective. There will be lopped logging slash in some of the corridors but until the spur roads and skid trails are in the corridor locations will not be known. Lopped logging slash which falls within the thinning corridors will either have to be piled with 101 dollars or left unpiled. With the amount of logging slash created, it is doubtful that there will be a great impact on the corridors from lopped logging slash.



Compartment 061

Sale Boundary
Compartment Boundary
100% pile and burn
Lopping
Yum Yard



Compartment 064

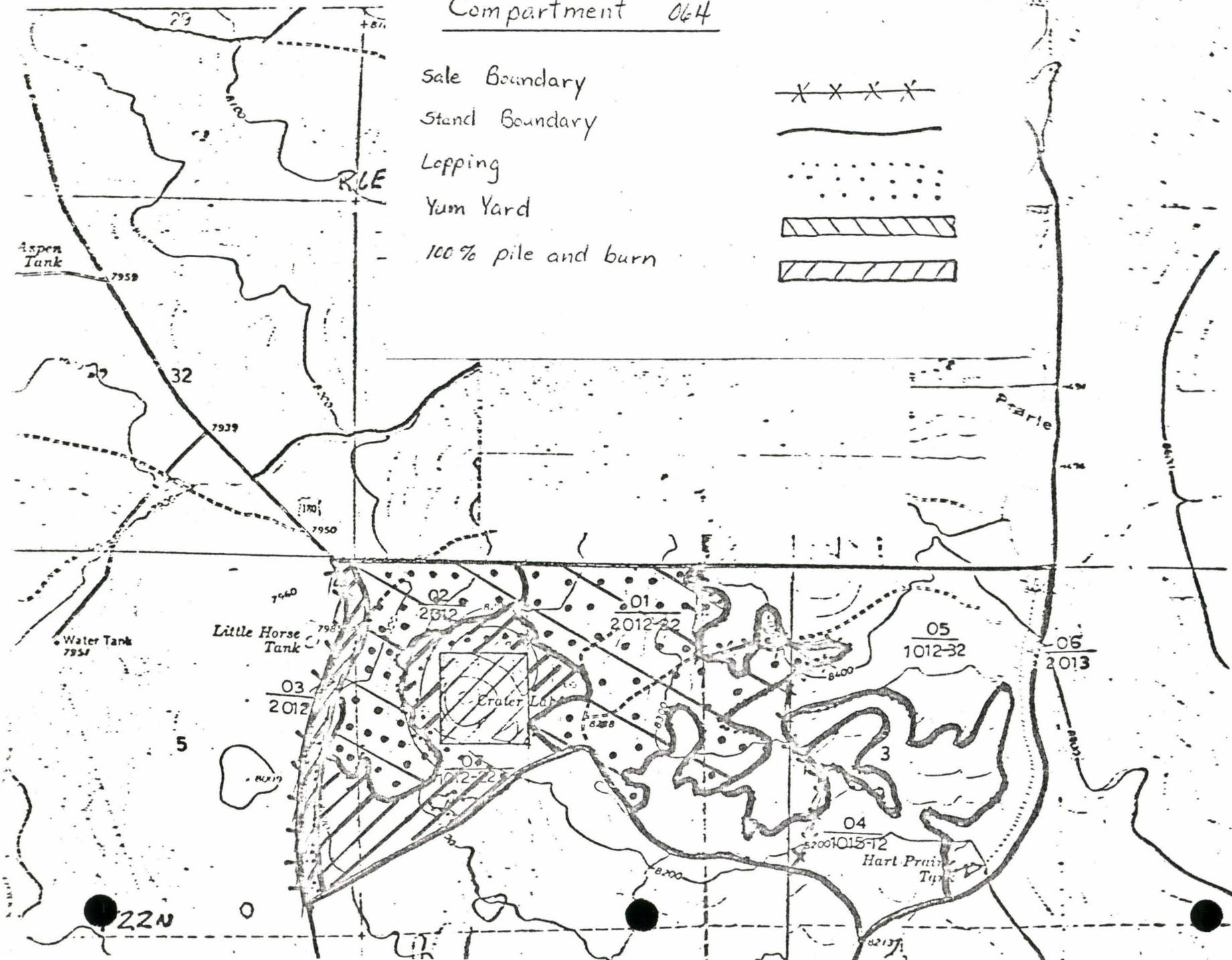
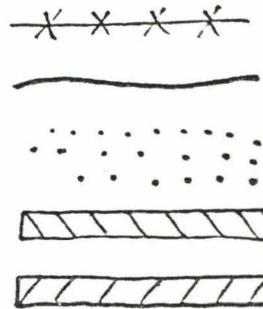
Sale Boundary

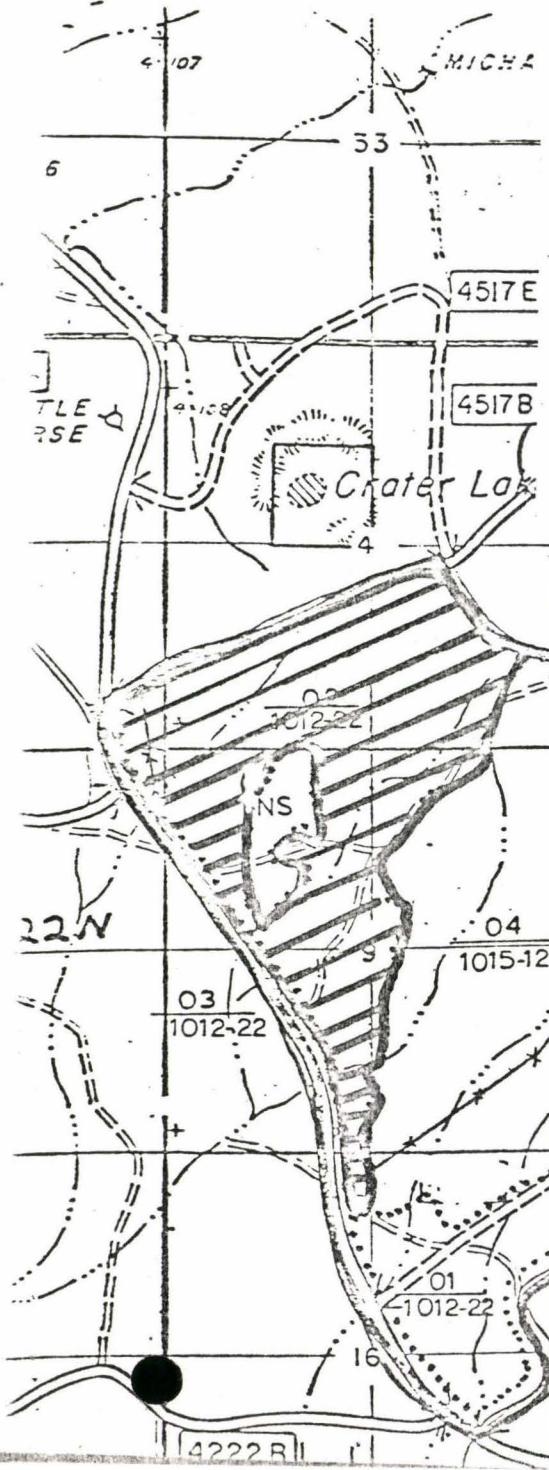
Stand Boundary

Lopping

Yum Yard

100% pile and burn





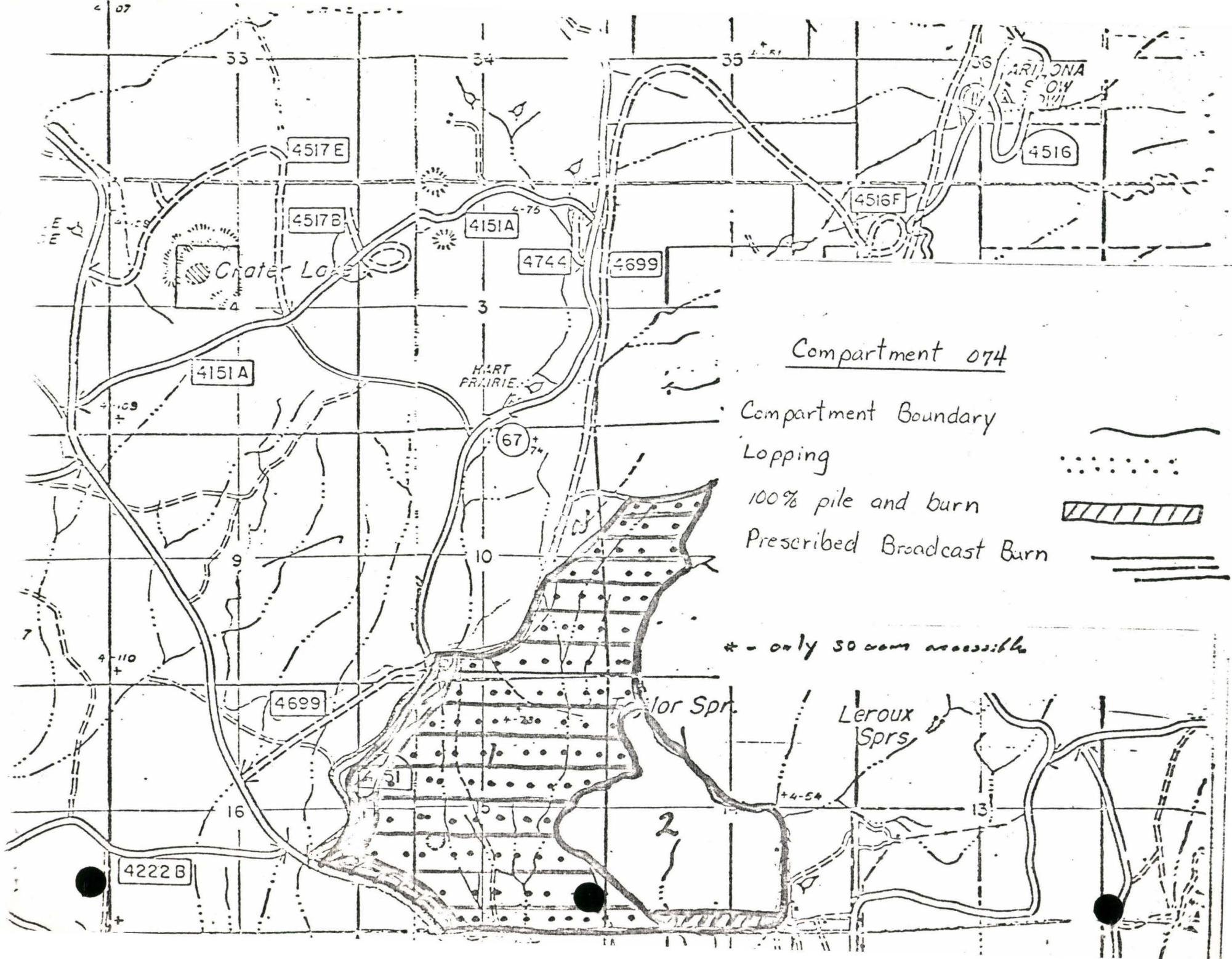
Compartment 069

Compartment Boundary

100% pile and burn

Stand Boundary





Compartment 074

Compartment Boundary
Lopping
100% pile and burn
Prescribed Broadcast Burn

-- only 50 acres accessible